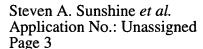
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- a) a field-structured composite comprising a solid nonconducting medium, and an ordered aggregate structure of conducting magnetic particles within said medium;
- b) electrodes positioned to allow the electrical resistance of said composite to be measured; and,
- c) a coupling mechanism which couples the environmental parameter to said composite.
- 30. (New) The field-structured sensor of claim 29, further comprising environmental parameter isolation means such that the environmental parameter is the dominant influence affecting the electrical resistance of said composite.
- 31. (New) The field-structured sensor of claim 30, wherein the environmental parameter isolation means comprise thermal insulation.
- 32. New) The field-structured sensor of claim 31, wherein the environmental parameter isolation means comprise a temperature controller.
- 33. (New) The field-structured sensor of claim 30, wherein the environmental parameter isolation means comprise a chemical barrier.
- 34. (New) The field-structured sensor of claim 30, wherein the environmental parameter isolation means comprise a substantially opaque barrier.
- 35. (New) The field-structured sensor of claim 30, wherein the environmental parameter isolation means comprise a substantially rigid enclosure.
- 36. (New) The field-structured sensor of claim 29, wherein the environmental parameter is stress applied to the sensor, and the coupling mechanism transmits stress applied to the sensor to said composite.



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- 37. (New) The field-structured sensor of claim 30, wherein the environmental parameter is stress applied to the sensor, and the coupling mechanism transmits stress applied to the sensor to said composite.
- 38. (New) The field-structured sensor of claim 37, wherein the stress applied to the sensor is generated by an accelerometer mass in functional relation to the coupling mechanism.
- 39. (New) The field structured sensor of claim 38, wherein the electrodes are positioned so as to allow measurement of multiple axes of acceleration.
- 40. (New) The field-structured sensor of claim 29, wherein the environmental parameter is an applied magnetic field.
- 41. (New) The field-structured sensor of claim 30, wherein the environmental parameter is an applied magnetic field.
- 42. (New) The field-structured sensor of claim 29, wherein the environmental parameter is temperature, and the coupling mechanism comprises a strong thermal link to the immediate environment of the sensor.
- 43. (New) The field-structured sensor of claim 30, wherein the environmental parameter is temperature, and the coupling mechanism comprises a strong thermal link to the immediate environment of the sensor.
- 44. (New) The field-structured sensor of claim 29, wherein the environmental parameter is electromagnetic radiation incident on the sensor, the coupling mechanism comprises optics which direct said electromagnetic radiation onto the field-

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structured composite, thereby heating the composite and changing its electrical conductivity.

45. (New) The field-structured sensor of claim 30, wherein the environmental parameter is electromagnetic radiation incident on the sensor, and the coupling mechanism comprises optics which direct said electromagnetic radiation onto the field-structured composite, thereby heating the composite and changing its electrical conductivity.

46. (New) The field-structured sensor of claim 29, wherein the environmental parameter is electromagnetic radiation incident on the sensor, the nonconducting medium is a semiconductor, the coupling mechanism comprises optics which direct said electromagnetic radiation onto the field-structured composite, generating electron-hole pairs within the nonconducting medium, thereby changing the electrical conductivity of the composite.

47. (New) The field-structured sensor of claim 30, wherein the environmental parameter is electromagnetic radiation incident on the sensor, the nonconducting medium is a semiconductor, the coupling mechanism comprises optics which direct said electromagnetic radiation onto the field-structured composite, generating electron-hole pairs within the nonconducting medium, thereby changing the electrical conductivity of the composite.

48. (New) The field-structured sensor of claim 29, wherein the environmental parameter is concentration of a selected chemical in a background carrier, and the coupling mechanism exposes the composite to said carrier.

49. (New) The field-structured sensor of claim 48, wherein the nonconducting medium changes volume when exposed to the selected chemical.

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